

SAYRE (R.H.)

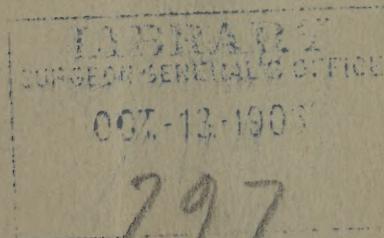
POSTURE IN THE DIAGNOSIS OF DISEASE.

BY

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## POSTURE IN THE DIAGNOSIS OF DISEASE.<sup>1</sup>

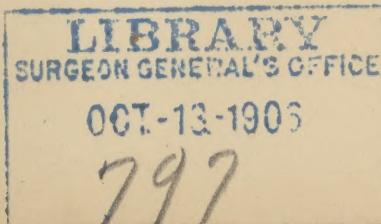
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THE attitudes which are assumed by those suffering from different diseases are well known to specialists, but do not receive sufficient recognition from the general practitioner, and it has seemed to me that perhaps it would be time well spent to dwell upon the importance of posture in the diagnosis of disease. I have, therefore, had a number of slides made from photographs of the cases which I meet in my daily practice, which I think will serve to emphasize these remarks more emphatically than I can by words alone.

A large number of the distortions which come to the orthopedic surgeon for treatment are the result of failure to make proper diagnosis in the early stages of the disease, when it might have been possible to cure the patient without deformity. A great many more come to him with deformities which are the result of imperfect diagnoses, and consequent improper treatment, and my object this evening is to endeavor to portray, as clearly as I may be able, the striking characteristics which form the chief diagnostic points in disease of the spine, hip, and knee, in lateral curvature, in torticollis, and in some of the varieties of paralysis, which furnish the great bulk of the patients who come to the orthopedists, so that it will be possible to make a correct diagnosis in the early stages of the disease, thus saving the patients the months of suffering which precede the occurrence of deformity, and giving them a greater chance to recover with straight and useful bodies.

The deformities, which the orthopedist meets, with the exception of those which are congenital, and of which I shall not speak this evening, are the result of causes which have been active for months, and sometimes for years, and which, not having been recognized, have not been treated, until the patient has become so misshapen

<sup>1</sup> The cuts illustrating this article have kindly been furnished by "Pediatrics," vol. iii., 1897.



that it is impossible to fail to notice it, or else has suffered such intense pain that the attention of the parents and physician is, perforce, directed to the cause of the difficulty.

**LATERAL CURVATURE.** Let us take, for instance, lateral curvature, which furnishes a great part of the work for the orthopedic surgeons. How many times do I see patients with very crooked spines, whose parents tell me they have been told that the child would "grow out of it." They, themselves, have noticed that the little girl was round-shouldered, or that her dress did not fit as accurately as it should, and having taken her to the family physician, have been told that they were over-anxious, that the child should be allowed to run and play in the open air, and that she would grow out of it. These children do not "grow out of it;" they grow into it instead, and it is only by recognition of the earliest symptoms of the disease, and instituting proper treatment before the commencement of deformity, that you will avoid the hideous distortions which are characteristic of this affection. The fact that there is very slight distortion present when you first see the case is no index of the amount that may be present in five years, if the child is neglected. In fact, one of the worst cases that I have ever seen was so little deformed that when the mother was first told by her family physician that the child was in danger of having a bad lateral curvature, she herself failed to detect that there was anything abnormal about the spine. And when I saw this child, some five years afterward, it was one of the most distorted objects that I have ever had the misfortune to see.

In examining these patients always strip them completely to the waist, or, rather, to the great trochanters, and allow the child to stand in a natural unconstrained position, with the light shining evenly on both sides to avoid shadows. It is quite possible that at first it will assume an erect position on account of the strangeness of its surroundings; but, if left to itself for a few moments, will gradually resume its habitual attitude, and you can then make your observations while allowing the child's mind to be diverted in any way you choose, and, apparently, paying no attention to it. You will usually notice more weight is borne upon one leg than upon the other, that there is a slight inequality in the two shoulders, that the arm hangs somewhat closer to the body on one side than on the other, that the point of one scapula is, perhaps, a trifle higher than the other, and that the spine in the dorsal region is slightly

concave on the side of the lower scapula, although it may be possible that the disease has not yet advanced to such a point as to give rise to a perceptible twisting of the spinous processes. Viewed from the front, it is quite probable that a line dropped from the centre of the sternum will not fall over the umbilicus, but pass to right or left, and that the trunk can be seen not to be held imme-

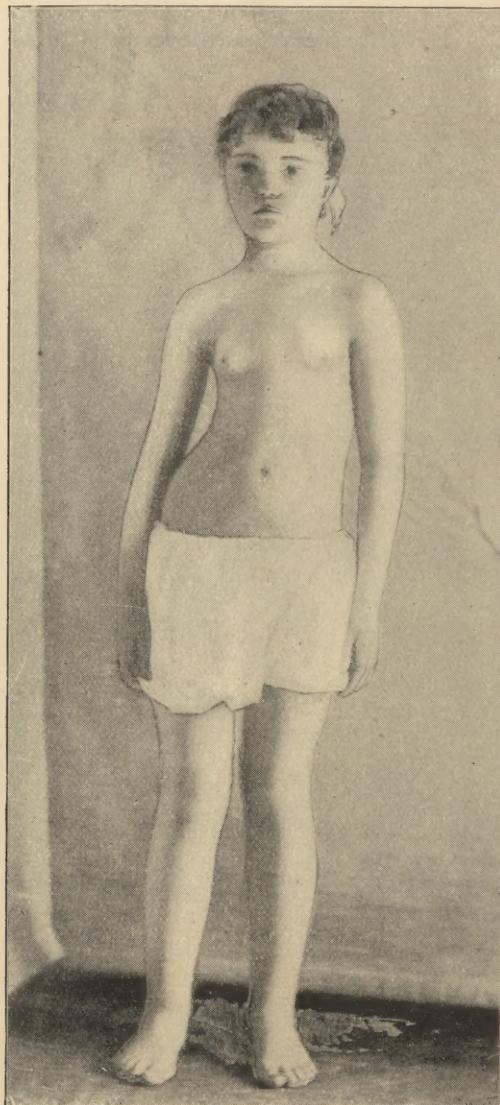
FIG. 1.



diately above the pelvis, but is inclined somewhat to one side, and you will very often, in fact, almost always, notice that on the side where the scapula is highest and most projecting, that there is diminution in the size of the mammary gland. If the disease has advanced far enough, you will notice when the child bends forward and allows the hands to droop toward the floor, that the ribs are fuller on one side than on the other, the fulness being on the side of the higher scapula. This fulness is caused by the

rotation of the vertebræ on each other, and consequent projection of the ribs on that side of the vertebræ rotated toward the rear, and

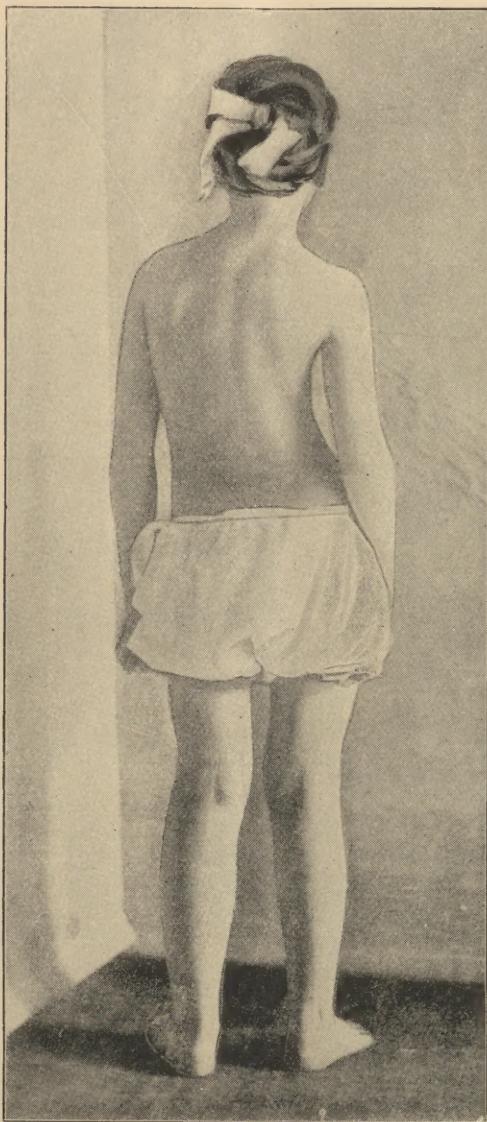
FIG. 2.



recession of the chest wall on that side of the vertebræ which is rotated toward the front. This is the way in which these cases all

begin. None of them begin as bad cases, they are all slight, but they all make constant, though insidious progress toward hideous deformity.

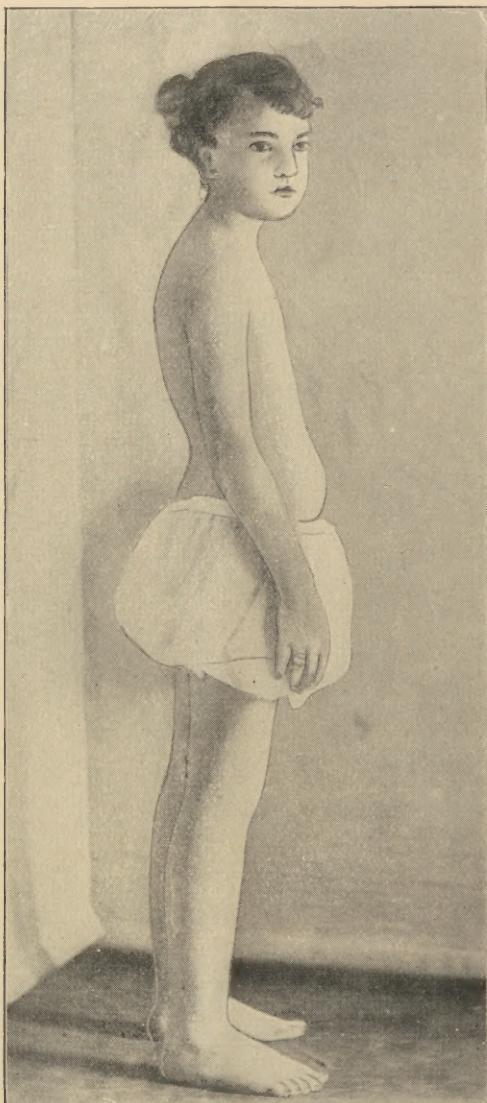
FIG. 3.



This girl (Fig. 1) shows an incipient case of lateral curvature. It is not so very incipient, either. If you will carefully observe you

will see many children who have much slighter deformity than this one, and the earlier you take the case the more likely you will be

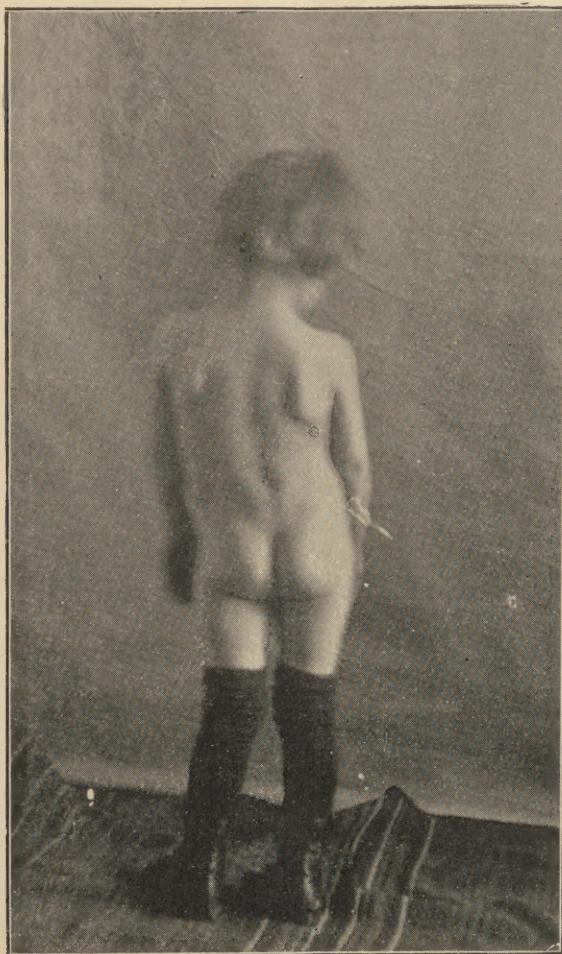
FIG. 4.



to have a good result. It is usually supposed that the disease begins about puberty ; whereas, in fact, it almost always begins very much

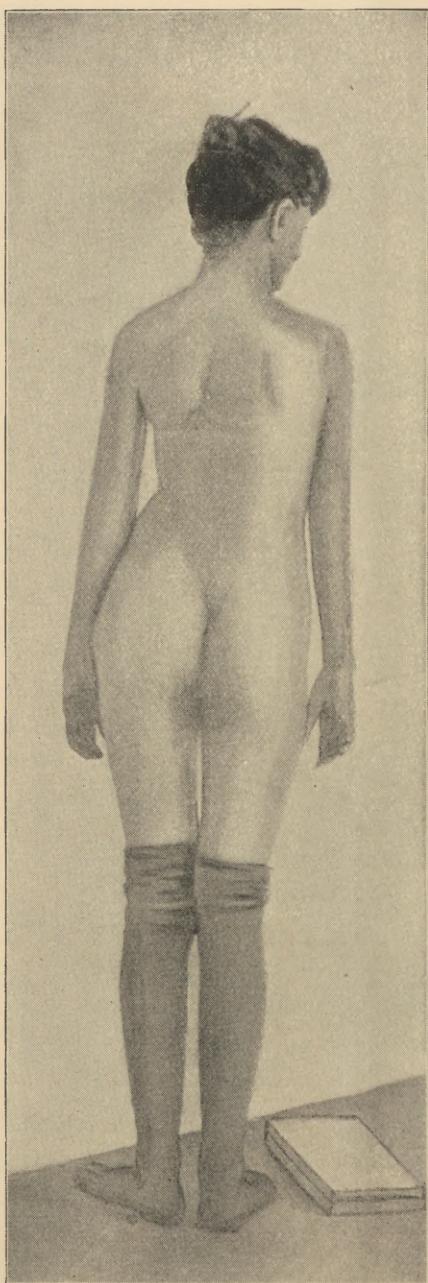
earlier, but is not recognized until puberty, and, therefore, is supposed, either by the parents or the physician, to have commenced a very short time before, while really it may have been present for years.

FIG. 5.



The little girl shown in Figs. 2, 3, and 4 presents precisely the same symptoms as the one whose picture you have just seen, except that the deformity is more pronounced—there is more bending of the spine; there is a greater difference in the level of the nipples; more of the weight is borne upon one leg; the trunk is slanted much more on the pelvis; one scapula is markedly higher than the

FIG. 6.



other, and there is a very decided rounding of the shoulders, as you will see in the profile view, while the child's stomach projects at least six inches in front of her chest.

These are the cases of the so-called "idiopathic" lateral curvature, called "idiopathic" because we have been too stupid, up to the present time, to find out the cause which produced it. But, in many of these cases, I feel persuaded that we have underlying it a slight attack of anterior poliomyelitis, which has affected the muscles of the trunk instead of those of an extremity, and that there is a failure of nutrition in certain parts of the spine and a constant inequality in the growth between the two sides, which, left to itself will produce a lateral curvature of the spine as surely as a similar condition in the foot will produce a talipes of some description.

In some cases of lateral curvature we have rickets as the underlying cause, and the little boy seen in Fig. 5 presents a typical picture of this variety of lateral curvature. You will notice that he has knock-knees as well

as a lateral curvature. His little sister also has lateral curvature. She has been treated by gymnastic exercises alone, but the little boy's physical condition was such that I found it impossible to keep his spine in position by his voluntary efforts, and he was, therefore, treated by means of a plaster-of-Paris corset, with the result of giving him, up to the present time, a straight spine, some four years since treatment was first begun, and I see no reason why the child should not continue to keep straight until his bones have become sufficiently firm and his muscular system sufficiently well-developed to remain erect.

Another cause which produces lateral curvature is inequality in the length of the two legs, and, although you will find in various textbooks the statement that a difference in the length of the two legs does not cause curvature of the spine, I know, from personal observation, that this is a mistake; and I show you here the portrait of a girl (Figs. 6 and 7) who fractured one thigh when a child and has shortening of her right leg

FIG. 7.



of an inch and a half, and who has a marked lateral curvature when this deformity is not corrected by elevating the short leg; and even when this has been done, there is a slight fulness of the

FIG. 8.



lumbar vertebræ, caused by the weight of her body being supported, in an improper position, while still a child, by her soft and cartilaginous vertebræ.

In some cases an infantile paralysis may affect a lower extremity and muscles of the trunk, possibly almost the entire half of the body, as seen in the accompanying photograph. You will find that there is a certain amount of lateral curvature which is unavoidable in cases of this kind, and that the best result which you can ever attain will be but approximately good.

Still another cause of lateral curvature is to be found in empyema, and you will see in Fig. 8 a very beautiful example of this variety of curve. If you will notice these pictures you will see the same lowering of shoulder on the concave side, the same lowering of the nipple on the concave side, the lowering of the scapula on the concave side, and, when the patient is bent forward, the lowering of the ribs on the concave side, all of which points you see in the ordinary lateral curvature unaccompanied by pleurisy or empyema; and, nevertheless, you will see among the German writers the statement that the lateral curvature which follows empyema is not accompa-

FIG. 9.



nied by rotation of the vertebrae, and is not like the ordinary rotary lateral curvature in the deformity which is produced. This

case is but one of many in which I have seen a deformity precisely similar to that found in cases where there has been no empyema.

The next patient (Fig. 9) has a lateral curvature caused by a very rare accident, or, at any rate, attributed by her mother, to a very rare accident, and I think, with justice. The child was a transverse presentation, and great force was required in delivery. The mother thinks that the ribs were separated from the sternum on the right side at that time. They were so separated in some manner, and shortly afterward there was suppuration in the chest-wall which lasted for some time. When the patient came under my observation, the upper ribs were bunched together under the right axilla, while the lower ribs almost touched the pelvis, and between the two the liver could be

felt with great distinctness. The sternum projected sharply toward the front, like the prow of a ship. There was, however, the same

FIG. 10.



rotation of the vertebrae and projection of the ribs that we see in typical lateral curvature. The next pictures (Figs. 10 and 11) show a very exaggerated form of lateral curvature, and I would ask you to contrast the condition of this girl, at the age of sixteen years, who has never had treatment of any kind, with the little girl of eight years, whose picture was first thrown on the screen. It hardly seems as if the pictures represented the same disease, and yet, left to herself, the little girl would have a very good chance of becoming as crooked as this last patient.

The next photograph (Fig. 12) shows you three sisters, all of whom have lateral curvature, and I would like to draw your attention to the fact that not infrequently the same cause which has given rise to lateral curvature in one member of the family may be present and give rise to it in other members. I have found

this to be the case in some five different instances, and have recorded three sisters on several occasions, and a mother and daughter

FIG. 11.



FIG. 12.



on several other occasions, all of whom were afflicted with lateral curvature, and would draw your attention to the importance of watching other members of any family in which you find one case of lateral curvature.

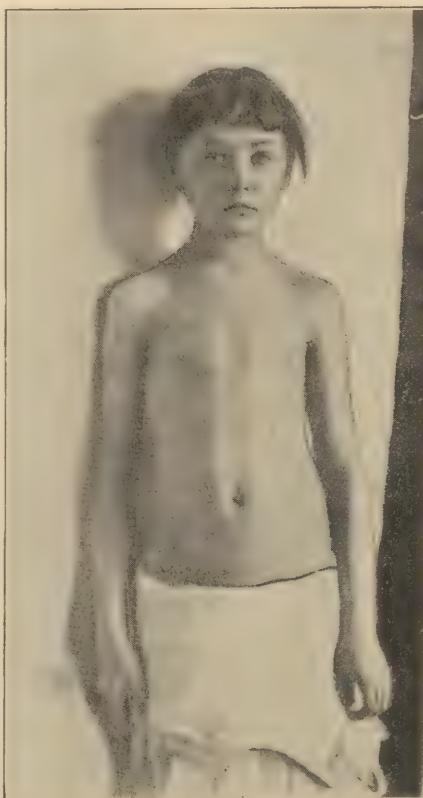
POTT'S DISEASE. When I first began the study of medicine I was under the impression that one of the simplest things was the differential diagnosis between

lateral curvature of the spine and Pott's disease. But the more I have studied the more firmly I have become convinced that frequently these two conditions are mistaken for each other, and that, not only by the general practitioner, who may not have seen many similar cases, but by men of large experience in institutions especially devoted to the treatment of deformities.

In any case of lateral curvature of the spine that is presented to you, if you find the patient complaining of pain in the stomach or chest, or difficulty of respiration, and find that there is pain or stiffness on bending and stooping or picking up objects from the floor, spasm of the spinal muscles, tenderness on concussion of the spine or an elevation of temperature, watch the patient with great care to see that it is not a case of Pott's disease which you are treating instead of one of rotary lateral curvature.

I wish you would notice particularly the pictures, Figs. 13 and 14. It is a case of Pott's disease of the seventh dorsal vertebra, which was brought to me for consultation as the child had not improved as she should under treatment for lateral curvature. There

FIG. 13.



is very little deformity to be seen ; there is very slight elevation of one shoulder, a little bulging of the ribs to one side—the deformity is possibly rather better seen from the front than from the back. You will notice in the back that there is prominence of the erector spinae muscles. They are thrown into marked spasm, and efforts to bend the child's spine in certain ways brought out the

spasm still stronger. The exercises which the child had been doing for her lateral curvature were stopped. She was put in a plaster-of-Paris jacket with a jury-mast, which she has worn steadily for the last three years. Her jury-mast has now been discarded, the knuckle in her back has not grown any larger, she is absolutely free from pain, and will eventually be perfectly well, with a straight spine.

This other patient (Figs. 15 and 16), whose attitude is very similar to that of the ordinary lateral curvature, has Pott's disease of the first lumbar vertebra, with psoas contraction, tilting of the pelvis and rotation of the spine. Judging from the attitude alone, it

would be very difficult to make a diagnosis in this case ; but the moment you endeavor to flex the spine or to rotate it, the muscular spasm is brought out clearly, and when the lateral curvature is removed by manipulation, a slight prominence of the lumbar spine is made evident. To this latter point I would like to call your attention very strongly, for quite frequently a lateral deviation of the spine masks the presence of an antero-posterior projection of the vertebrae.

FIG. 14.



The picture of the little boy, which is seen in Fig. 17, might possibly be mistaken for a case of hip-disease, but is one of disease of the lumbar spine with a twisting of the trunk on the pelvis on account of psoas contraction which so flexes the left thigh upon the pelvis as to resemble quite strongly the first stage of hip-disease, and emphasizes the fact that the differential diagnosis between incipient hip-disease and disease of the lumbar spine is often difficult.

Another disease that may be confounded with Pott's disease is torticollis. Practically, torticollis is a lateral curvature of the spine, except that it is lateral curvature of the cervical spine, and the position of a typical case is shown in Figs. 18 and 19. I wish you would contrast these photographs with those seen in Fig. 20, which are those of a boy with inflammation of the first and second cervical vertebrae. You will notice that, while the chin is thrown up in the case of torticollis, it is thrown down in the case of spondylitis—that the head is bent more strongly to the side in the spondylitis and that there is not so much rotation as there is in the case of torticollis. The sterno-cleido-mastoid is not affected so much as the deeper muscles of the neck, and, while it is possible in the case of the boy with torticollis, if his head is held in such a position as to relax the sterno-mastoid, to move the head quite freely on the neck, any effort to do this in the case of spondylitis

FIG. 15.



causes pain. The boy with spondylitis also had great difficulty in opening his mouth, and in his case abscess was suspected in the posterior pharynx, but its presence or absence could not be determined, as it was impossible for him to allow his mouth to be opened wide enough to permit of the finger to be passed to the back of the throat. This case was seen also in consultation, there having been a difference of opinion among three other physicians who

had seen the boy, as to whether or not the muscles of his neck should be cut to cure his torticollis, and the patient was finally sent to me for diagnosis which, as I have said, was clearly that of inflammation of the first and second cervical vertebræ. The attitude which he presents is typical, but is not so exaggerated as that of the little girl whose picture is seen in Fig. 21, whose head was so twisted to one side that the clavicle was excoriated from rubbing against the chin.

In this child's case there had also been a question of diagnosis; a number of gentlemen had advanced various theories as to the cause of her deformity. She was also seen in con-

sultation, and at that time had suffered so intensely from pain on every effort to lie down, that for three weeks she had slept by leaning her head on her hands while she sat bent slightly forward in the window seat. All efforts to place her in the recumbent position were violently resisted, and the child said she felt as though she were about to die if placed on her back.

This same condition I have noticed in four cases of disease of

FIG. 16.



the first and second cervical vertebrae, and the explanation is very easy, if you think for a moment of the anatomical structure of the parts. In all the other vertebrae the weight of the body is super-

FIG. 17.



imposed upon the upper surface of the vertebra, and, consequently, downward pressure gives rise to pain, while the recumbent position usually affords relief; but in the first and second cervical vertebrae

the conditions are altered, and we have the body of the atlas resting against the odontoid process of the axis, so that if the patient lies upon the back, the weight of the head crowds the inflamed sur-

FIG. 18.



faces together, while in the upright or slightly stooping position, the inflamed vertebrae are relieved from pressure, and comfort is obtained. Conversely, if the disease were in the vertebrae lower

down in the spinal column, the upright position would produce more pressure on the inflamed surfaces than the recumbent, and,

FIG. 19.



consequently, would be painful. This explanation, which I have not seen elsewhere advanced, seems to me perfectly rational, and makes clear this phenomenon which I have noticed in all the

cases of disease of the atlo-axoid articulation that I have encountered.

FIG. 20.



It has been my fortune to see four chronic cases and three which were the result of direct violence (resulting apparently in a fracture of part of the vertebrae) with immediate deformity, almost precisely the same as those I have shown you, with the same symptoms of

inability to open the mouth to its full extent, excessive pain on movement of the head, and apprehension of death on assuming the recumbent position.

It may be of interest to you to see the apparatus which I used in the case of the little girl whose head was so much bent to one side, and which I employed also in three other cases which I saw within a month from the time when I first saw her. It consists (Fig. 22) of a pelvis belt and body-piece which were attached to the trunk by an apron and straps, and from which started at the nape of the neck, an extension screw which was attached to a headband by means of a universal joint, a similar joint forming the junction with the body-piece. This having been fastened to the child's body in the deformed position, the attitude was slowly corrected, being guided in the movements by the patient's comfort, holding her head in the position which gave her the greatest feeling of security and relief. With the apparatus adjusted she was enabled to lie down and sleep, which she had not been able to do for three weeks previously. The apparatus does not give much extension, as this is not required in disease in this part of the spine, but the rotation of the head and lateral bending is prevented, and the spine is put in a condition of as nearly physiological rest as is practicable.

This picture (Fig. 23) shows the child with the apparatus applied, and the following (Fig. 24) shows her condition after the use of the splint had been abandoned for six months. She wore it altogether for a little over two years, and has remained well.

FIG. 21.



Coming a little lower down in the spine, we have a somewhat different deformity.

This little girl has an inflammation of the first dorsal vertebra, and you will notice that between the shoulders there is an undue

FIG. 22.



hollowing of the spine, while just below the seventh cervical there is more prominence than you usually find, and I would ask you to be careful and not mistake a prominence of the first dorsal vertebra in cases of disease for the ordinary projection of the vertebra prominens, and, on the other hand, do not be misled when over-anxious

mothers come to you, having discovered the fact that there is a vertebra prominens, and mistake it for an abnormal projection on

FIG. 23.



the child's spine. Look for other points beside the knuckle—look for muscular spasm, which is the chief symptom of disease in any inflamed joint. Look for reflex pain at the periphery of the nerve

which comes from the spine at the point where you suspect inflammation ; look for interference with respiration, if the disease is in this particular locality.

FIG. 24.



The disease, of course, should be diagnosticated long before such marked deformity as this has taken place, and, if so diagnosed, the weight of the head removed from the inflamed vertebræ and the spine kept constantly in a state of physiological rest, such conditions ought not to take place.

You may find the child holding his head upon his hands. This attitude is very characteristic.

But the following position (Fig. 25) which you will see numbers of little patients assuming in high-up dorsal disease, is absolutely typical, and would make the diagnosis without further investigation.

I may say the same for the next picture (Fig. 26). The position of the

child's head, irrespective of the slight knuckle which you can see at the seventh dorsal vertebra, would show that his spine was inflamed.

This baby (Fig. 27), sitting in his mother's lap, with his belly blown up with wind and his head sunk between his shoulders, and the expression of apprehension on his face, presents a picture of Pott's disease too characteristic to be mistaken by any one who has ever seen a case.

This little child (Fig. 28) has disease in the lumbar spine. There is a knuckle there which can be seen, but it is not very marked, and possibly some might not observe it until their attention had been drawn to the fact, but, even if there were no knuckle to point out to you that the child had an inflamed spine, the way in which he rests his head upon his mother's knee, the position of his entire body, and the expression of his face, point to Pott's disease in unmistakable terms.

Here is another (Fig. 29) absolutely characteristic attitude of disease in the same location—the same child, in fact, who is walking along, his face puckered up with tears, his head bent back, holding on to his mother's hands; he is stiffening his arms and holding his body in a rigid attitude to prevent the spine from movement.

Here are two other children with their heads thrown back. They throw their heads back in order to get the weight of their body as far to the rear as possible and so transfer the superincumbent weight of the trunk from the inflamed and sensitive anterior part of the bodies of the vertebrae to the hard, transverse processes which are more able to bear the weight.

FIG. 25.



Here is another little chap (Fig. 30) with a hump on his back which no one could fail to recognize, but the position which he assumes is not infrequently found in children who have as yet no

FIG. 26.



FIG. 27.



knuckle in their spine, but who, suffering pain just as this little boy does, have tried to transfer the weight of their head and shoulders to their thighs by means of their arms, instead of allowing it to pass through the inflamed spine. They have made a prop for their back, and have tried to teach us how to support the superincumbent weight of the body.

By paying attention to the incipient cases, whose pictures I have shown you, a diagnosis should always be made before a child assumes

FIG. 28.



the position which this little hump-back has, which you see in this picture, Fig. 31. Beside these typical positions, notice the tender tread which the child has, his anxiety to lean upon something, to drag on his mother's arm, to rest his head and shoulders on the table or chair, and when left alone to play, how often do these mothers tell you that he lies down on the floor instead of running about as the other children do. Notice these points, and you will not see patients like the last two whose pictures I have shown you.

HIP-DISEASE is another one of those maladies where the ounce of prevention is worth all the pounds of cure imaginable.

Look at this little boy (Figs. 32 and 33). There is hardly anything to be seen abnormal in his position, but if you will carefully note his attitude, you will see that he is bearing his weight upon his left leg, that the right gluteo-femoral crease is not so distinctly marked as the left. The disease has not yet gone on sufficiently

far to produce atrophy of the muscles or, at any rate, sufficient atrophy to show in this photograph. Very possibly careful measurement might show slight atrophy. What you will notice is, as I say, this slight flexion of the suspected leg, slight obliteration of the gluteo-femoral fold, and when you lay the boy on his back on a hard surface, there may be slight arching of the pelvis, and on careful and gentle movements you will find spasm of the muscles which control the right femur.

Now look at this little girl (Figs. 34 and 35). The disease has gone on a little farther. It is quite distinctly marked in her case. The flexion is more pronounced, the weight is borne more apparently on the right leg, and the gluteo-femoral fold is still less marked; the left buttock is dropped still lower than in the case of the first patient.

Let us pass on a little farther in the disease. You will notice that this child (Fig. 36) presents the characteristics of the latter almost in duplicate, except that each one is exaggerated a trifle. The body is thrown sufficiently to the right to cause a slight lateral curvature, the thigh is more flexed upon the pelvis, the dwindling of the thigh muscles is more marked.

In this case we have a still farther step in advance: the patient's thigh has now become tender, and, involuntarily, the child puts her hand to it to protect herself.

Here is a little boy (Figs. 37 and 38) who shows the same symp-

FIG. 29.



toms, but in his case the abduction has become marked as well as the flexion. In the first case there was no abduction ; in the second there was very trifling abduction as well as flexion ; in the third and fourth patients the abduction was well marked, and in this little boy the abduction is a very striking feature in his position ; while seen in a profile view, the flexion has become a very marked characteristic.

This is the position that children assume who are brought to the doctor, said to be " threatened with hip-disease." A child is threatened with hip-disease very much after the manner in which it is threatened with a broken leg.

FIG. 30.



When people are " threatened " with pneumonia, and threatened with typhoid fever, and threatened with smallpox, and threatened with hip-disease, they are generally in a very bad way, and the patients that I see that come to me with a diagnosis of threatened hip-disease have generally had the disease present for weeks, and often for months.

It does not necessarily follow that the patient has very much pain in the beginning ; the pain, if any, is very rarely located in the hip, but in the knee, in the big toe, sometimes with a spasm of the calf-muscles on account of the peripheral character which

these joint pains always possess ; so that the patient feels the pain at the extremity of the nerve which supplies the inflamed joint with sensation. At the beginning there is sufficient muscular spasm to prevent attrition of the joint under examination ; in consequence, the patient does not have pain, but the slight involuntary twitching of the muscles around the affected joint should warn the physician that disease is there, and he should not wait for the occurrence of pain before making the diagnosis.

Here is another patient (Figs. 39 and 40) with marked deformity, but who suffered very little pain. In this case the joint, I

believe, was syphilitic, because under antisyphilitic treatment, combined with protection with a splint, the deformity disappeared with great rapidity. The abduction in this case is much more marked than any other symptom, there being hardly any flexion, which is unusual.

This patient (Figs. 41 and 42) shows the results of untreated hip-disease. In fact, hardly recognized hip-disease. The arthritis in this case came on subsequent to a typhoid fever, or, at least, that was the story which I received.

In this case you perceive there is very great adduction instead of abduction of the leg, and marked inward rotation, in contradistinction to the outward rotation, which has been seen in all the incipient cases. Traction by weight and pulley, and subsequent forcible reduction in this case, combined with tenotomies of the contracted adductors, placed his leg in a fairly useful condition.

Here is another case of untreated hip-disease with marked flexion of the thigh on the pelvis, and elevation of the trochanter above Nélaton's line, the position being almost that of congenital dislocation of the hip.

This boy (Figs. 43 and 44), another case of improperly treated hip-disease, was allowed to recover with his thigh ankylosed at

FIG. 81.



right angles to the trunk, and required osteotomy in order to make his legs parallel and prevent his walking in the wretched position which you see depicted in this photograph.

FIG. 32.

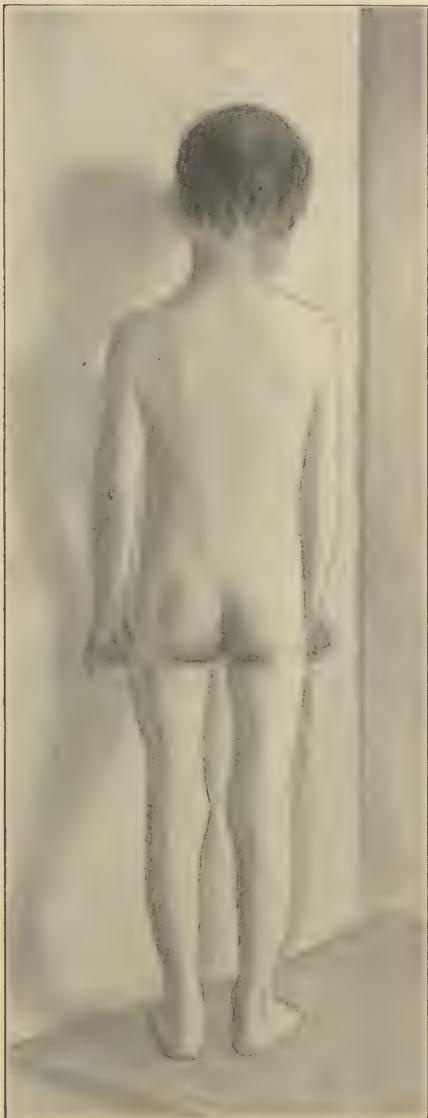


FIG. 33.



This little girl (Figs. 45 and 46) shows the position of a marked case of hip-disease, with tenderness. She cannot stand without

support. The thigh is flexed on the pelvis at an angle of  $80^{\circ}$ ; the toe just touches the floor; the back is very hollow, and any movement causes intense suffering. When this child is not sup-

FIG. 34.



FIG. 35.



ported with her body upright the position which she assumes is shown in this photograph, and is the one in which she found most comfort.

SACRO-ILLIAC DISEASE. This next photograph (Fig. 47) shows the typical position of disease of the sacro-iliac synchondrosis. This position, in my experience, is characteristic of disease in this locality, and I have never seen it produced excepting by this cause. If

FIG. 36.



you will compare this with the position of hip-joint disease, you will notice the difference. We do not have flexion and abduction of the thigh, with external rotation of the femur, as in cases of hip-joint disease. The patient, however, bears the weight of the body upon the sound leg, and the trunk leans quite far over toward the

sound side, for the purpose of relieving the inflamed sacro-iliac joint from the pressure. You will usually notice atrophy of the buttock on the affected side, and occasionally some slight lowering of the

FIG. 37.



gluteo-femoral crease, but the characteristic point of the deformity is the relation of the trunk to the pelvis. On examination of the patient, you will find that the movements of the femur in the acetabulum are unrestricted, and there is not the pain on pressure

behind the trochanter and between the trochanter and the crease of the ilium, which is usual in hip-joint disease, but that if pressure is made over the line of junction between the ilium and the sacrum, pain will be elicited ; that if the two iliac bones are firmly

FIG. 38.



pressed together, without crowding the head of the femur into the acetabulum, pain will be caused, which is not the case in disease of a hip-joint.

I have noticed in foreign literature several cases described as

"obstinate sciatica," with pictures presenting exactly the contour shown by this patient, and in reading the histories of these cases,

FIG. 39.



it was clearly evident that the sciatic pain was caused by an inflamed sacro-iliac joint, although this had not been recognized.

FIG. 40.



FIG. 41.

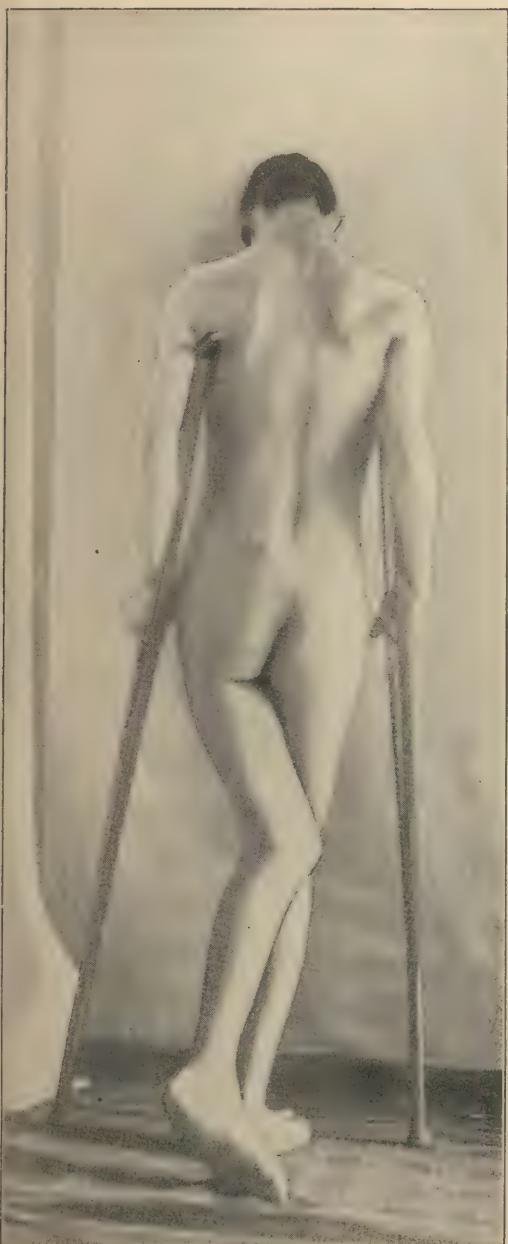


FIG. 42.

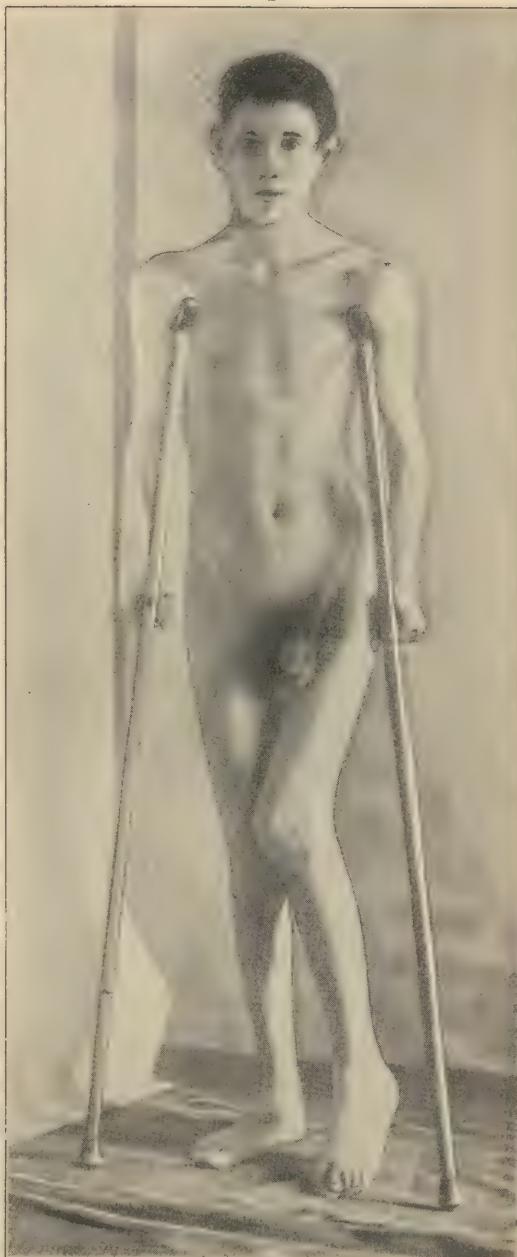


FIG. 43.



COXA-VARIA. Another condition which is occasionally confounded with disease of the hip-joint is that of coxa-varia, or

FIG. 44.



FIG. 45.



FIG. 46.



bending of the neck of the femur, which is analogous to genu-valgum. It may be unilateral or bilateral. In the case whose picture I now show you (Figs. 48 and 49), the position at first sight resembles that of double hip-disease, with this difference: that while there is very marked adduction of both femora, there is outward instead of inward rotation, and the trochanter does not lie above Nélaton's line. If you notice the photograph closely, you will see that the patient, in addition to coxa-varia has slight genu-valgum in both legs. There is restriction of movement in these cases; the

FIG. 47.



restriction, however, is not caused by muscular spasm, but by a limitation of motion produced by distortion of the neck of the femur. In some of these cases the neck of the femur has been so bent that the trochanter will lie above Nélaton's line, and a differential diagnosis will have to be made between this condition, an old case of hip-joint disease with absorption of bone, or a fracture of the neck of the femur. There may be tenderness in the neighborhood of the joint, in this condition, the underlying cause of which is but imperfectly known, but which seems to be of rickets appearing

FIG. 48



FIG. 49.



later than usual, and in early cases it is possible, by means of traction applied, as if the case were one of hip-disease, to relieve the deformity. In cases which have advanced to such a condition that the bone is no longer flexible, deformity can only be relieved by an

FIG. 50.



osteotomy. You will notice that there is a very slight commencing lateral curvature, with a projection of the right scapula, in this case, showing the presence of rickets in various portions of the body.

**KNEE-JOINT DISEASE.** The next picture (Fig. 50) shows the position of the knee in characteristic inflammation of that joint, and is absolutely typical of every case of tubercular knee-joint which has been allowed to progress

for any length of time without treatment. The leg is flexed upon the thigh, the toe is everted the tibia is slightly subluxated backward, and the patella is unduly prominent. A hundred cases of old knee-joint disease, taken in succession, would look almost as if they were but casts from the same model. In consequence of the flexion of the knee-joint the heel does not touch the floor, but the patient usually rests upon the toes.

**PARALYSES.** Many of the most extraordinary deformities which come to the orthopedic surgeon are the result of paralysis of one form or another, and I have brought a few pictures of some of the more striking examples of this kind which I have met.

This little boy (Fig. 51) had a severe attack of diphtheria, with complete paralysis of his lower extremities and trunk; he recovered to a great extent, but the disease left him with very marked weakness of his abdominal and spinal muscles, and you will notice that the position in which he stands is typical of this. He stands balanced, holding himself up, not by his muscular strength, but by maintaining his centre of gravity. His hips are far in advance of his heels, his shoulders are thrown far back, and his head again is brought forward in order to preserve his equilibrium, while his

FIG. 51.



abdomen hangs down in front like a large pouch. He is incapable of contracting the abdominal muscles or of holding the body in a more erect position than that seen in the photograph.

When infantile paralysis affects the lower extremities and paralyzes them completely, the attitude which the knees and the feet assume vary according to the muscles involved.

The boy whose picture I now show you presents one of the conditions which we meet most frequently. The feet are in a position of equino-varus; the knees are markedly flexed, with contrac-

FIG. 52.



tion of the hamstring tendons, and great outward rotation of the tibia; the thighs are slightly flexed upon the pelvis owing to contraction of the psoas and iliacus muscles which still preserve some contractile power which is not opposed by the glutei.

This patient is unable to stand upright; he can only remain in the vertical position by assistance, as you see. His usual mode of progression is on all-fours, as in the accompanying picture (Fig.

52), which shows also the lordosis of the spine caused by atrophy of the erector-spinae muscles. In kneeling on the floor, the eversion of the tibia becomes more apparent, and you can also see the lateral curvature of the spine and the distorted relations existing between the trunk and the pelvis. On one side the adductors have retained some power, and that femur is somewhat adducted, while on the left, the adductors being paralyzed, and a slight amount of power remaining in the glutei and tensor vaginæ femoris, this thigh is somewhat adducted and flexed (Figs. 53 and 54).

FIG. 53.



It is quite possible to put these wretched patients in a condition to walk, in an ungainly fashion, it is true, but still in the upright position, by means of braces running from the ground to the body, with joints at the hips, knees, and ankles, which allow of very slight motion and which, by means of a spring, may be opened, and allow the patient to sit down.

Spastic paralysis, congenital and acquired, often gives rise to

most curious deformities, and the boy whom you see portrayed in this photograph (Fig. 55) shows the position typical of a usual case of congenital spastic paralysis. The adductors are strongly contracted as well as the hamstrings and tendo-Achilles, while there is marked atrophy of the anterior group of muscles in both the thigh and leg, which is largely owing to disuse. There is some

FIG. 54.



impairment of co-ordinating power of the other muscles of this boy's body, but the lower extremities are much more affected than any other portion. Free division of the contracted muscles, followed by rectification of this deformity, and immobilization for a month in plaster-of-Paris splints, put this boy's legs parallel, and a prolonged course of massage, gymnastics, and electricity, com-

bined with mental discipline, to re-establish voluntary control of his muscles, enabled him to walk up and down stairs without assistance, and to walk on the level without the aid of a cane, something which had been impossible for him to accomplish for years.

CONGENITAL DISLOCATION OF THE HIP may be confounded

FIG. 55.



with hip-disease, but the peculiar walk which is present in bilateral cases will at once distinguish it from all other diseases. If the affection is unilateral the diagnosis is more difficult, but the history of having never walked well, the absence of muscle spasm, and the usual presence of unnatural mobility all serve as differential points. Fig. 56 shows a case of congenital dislocation of both hips.

FIG. 56.



In running over this topic, the ground to be covered has been so extensive that my remarks have necessarily been of a very desultory character, but I trust that the pictures presented by the various types of disease have been sufficiently distinct to impress themselves on your memories, and also, that I have made the early diagnosis of some of these affections clearer to you by this means.







